CLAIMS

What is claimed is:

1. A mirrored storage volume system, capable of incoherency correction, comprising:

a primary storage controller capable of managing data, wherein the primary storage controller is capable of cyclic redundancy checking stored data;

a primary storage volume suitable for storing data, wherein the primary storage volume is linked to the primary controller;

a secondary storage controller capable of accepting transferred data from the primary storage controller, wherein the secondary controller is capable of cyclic redundancy checking stored data;

a secondary storage volume linked to the secondary storage controller wherein the secondary storage volume is capable of storing data mirroring the primary storage volume; and

a communication channel linking the primary controller to the secondary controller wherein the communication channel is suitable for communicating data transfers.

2. The mirrored storage volume system of claim 1, wherein the primary storage controller initiates a cyclic redundancy check of the primary storage volume upon reestablishment after an interruption in the communication channel.

3. The mirrored storage volume of claim 2, wherein the primary controller is capable of comparing the primary cyclic redundancy check scan with a secondary storage volume cyclic redundancy check scan.

4. The mirrored storage volume system of claim 1, wherein the secondary storage controller initiates a cyclic redundancy check of the secondary storage volume upon reestablishment after an interruption in the communication channel.

5. The mirrored storage volume system of claim 4, wherein the secondary storage controller compares the primary cyclic redundancy check scan with the secondary cyclic redundancy check scan and requests non-matching data blocks.

6. The mirrored storage volume system as claimed in claim 1, wherein the primary storage controller initiates a cyclic redundancy check scan at a set time period.

7. The mirrored storage volume system as claimed in claim 6, wherein the cyclic redundancy check scan is a low priority operation.

8. The mirrored storage volume system of claim 1, wherein the primary storage controller is capable of directing the primary storage volume to read and write data.

9. The mirrored storage volume system of claim 1, wherein the secondary storage volume is geographically remote from the primary storage volume.

10. The mirrored storage volume system of claim 1, further comprising a volatile memory linked to the primary storage controller, wherein the volatile memory is suitable for maintaining a coarse grain bit map.

11. The mirrored storage volume of claim 10, wherein the volatile memory is capable of maintaining the coarse grain bitmap if the communication channel is interrupted.

12. The mirrored storage volume of claim 10, wherein the coarse grain bitmap contains data representing changes to the primary storage volume.

13. A method for managing mirrored storage volumes, comprising:

conducting a block by block cyclic redundancy check scan on a primary and a secondary storage volume at a set time period;

transferring the primary storage volume scan results to a storage controller for the secondary storage volume;

comparing the cyclic redundancy check scan of the secondary storage volume to the cyclic redundancy check scan of the second storage volume;

requesting data for non-matching blocks from a primary storage controller;

communicating the contents of non-matching block from the primary storage volume to the controller of the second storage volume; and

writing the contents of the primary storage volume block into the non-matching block of the secondary storage volume.

14. The method for managing mirrored storage volumes as claimed in claim 13, wherein conducting a cyclic redundancy check scan is conducted as a low-priority operation.

15. The method for managing mirrored storage volumes of claim 13, wherein communication occurs between different geographic locations.

16. A method for restoring coherency in mirrored storage volumes, comprising:

conducting a block by block cyclic redundancy check scan on a primary and a secondary storage volume upon reestablishment of communication;

transferring the primary storage volume scan result to a storage controller for the secondary storage volume;

comparing the cyclic redundancy check scan of the secondary storage volume to the cyclic redundancy check scan of the second storage volume;

requesting data for non-matching blocks from a primary storage controller;

transferring the contents of non-matching blocks from the primary storage volume to the controller of the second storage volume; and

writing the contents of the primary storage volume block into the non-matching block of the secondary storage volume.

17. The method for managing mirrored storage volumes of claim 16, wherein communication occurs between different geographic locations.

18. A method for restoring coherency in mirrored storage volumes, comprising:

generating a coarse-grain bitmap of a primary storage volume in volatile memory linked to a primary storage controller upon disruption of communication;

utilizing the coarse grain bitmap to reestablish coherency upon reestablishment of communication; wherein in the event of disruption of the coarse grain bitmap the method reverts to the steps of:

conducting a block by block cyclic redundancy check scan on a primary and a secondary storage volume upon reestablishment of communication;

transferring the primary storage volume scan result to a storage controller for the secondary storage volume;

comparing the cyclic redundancy check scan of the secondary storage volume to the cyclic redundancy check scan of the second storage volume;

requesting data for non-matching blocks from a primary storage controller;

transferring the contents of non-matching blocks from the primary storage volume to the controller of the second storage volume; and

writing the contents of the primary storage volume block into the non-matching block of the secondary storage volume.

19. The method as claimed in claim 18, wherein generating the coarse grain bitmap includes data representing changes having occurred in the primary storage volume.

20. The method for managing mirrored storage volumes of claim 18, wherein communication occurs between different geographic locations.

21. A mirrored storage volume system, capable of incoherency correction, comprising:

a primary storage controller capable of managing data, wherein the primary storage controller is capable of at least one of a MD-5 and a SHA-1 scan of stored data;

a primary storage volume suitable for storing data, wherein the primary storage volume is linked to the primary controller;

a secondary storage controller capable of accepting transferred data from the primary storage controller, wherein the secondary controller is capable of at least one of a MD-5 and a SHA-1 scan of stored data;

a secondary storage volume linked to the secondary storage controller wherein the secondary storage volume is capable of storing data mirroring the primary storage volume; and

a communication channel linking the primary controller to the secondary controller wherein the communication channel is suitable for communicating data transfers.

22. The mirrored storage volume system of claim 21, wherein the primary storage controller initiates of at least one of a MD-5 and a SHA-1 scan of the primary storage volume upon reestablishment after an interruption in the communication channel.

23. The mirrored storage volume of claim 22, wherein the primary controller is capable of comparing the primary scan with a secondary storage volume scan.

24. The mirrored storage volume system of claim 21, wherein the secondary storage controller initiates at least one of a MD-5 and a SHA-1 scan of the secondary storage volume upon reestablishment after an interruption in the communication channel.

25. The mirrored storage volume system of claim 24, wherein the secondary storage controller compares the primary scan with the secondary scan and requests non-matching

data blocks.

26. The mirrored storage volume system as claimed in claim 21, wherein the primary storage controller initiates a scan at a set time period.

27. The mirrored storage volume system as claimed in claim 26, wherein scan is a low priority operation.

28. The mirrored storage volume system of claim 21, wherein the primary storage controller is capable of directing the primary storage volume to read and write data.

29. The mirrored storage volume system of claim 21, wherein the secondary storage volume is geographically remote from the primary storage volume.

30. The mirrored storage volume system of claim 21, further comprising a volatile memory linked to the primary storage controller, wherein the volatile memory is suitable for maintaining a coarse grain bit map.

31. The mirrored storage volume of claim 30, wherein the volatile memory is capable of maintaining the coarse grain bitmap if the communication channel is interrupted.

32. The mirrored storage volume of claim 30, wherein the coarse grain bitmap contains data representing changes to the primary storage volume.

33. A method for restoring coherency in mirrored storage volumes, comprising:
conducting at least one of a MD-5 and a SHA-1 scan on a primary and a secondary storage volume upon reestablishment of communication;

transferring the primary storage volume scan result to a storage controller for the secondary storage volume;

comparing the scan of the secondary storage volume to scan of the second storage volume;

requesting data for non-matching blocks from a primary storage controller;

transferring the contents of non-matching blocks from the primary storage volume to the controller of the second storage volume; and

writing the contents of the primary storage volume block into the non-matching block of the secondary storage volume.

34. The method for managing mirrored storage volumes of claim 33, wherein communication occurs between different geographic locations.